3.12 GEOLOGY AND SOILS

3.12.1 ENVIRONMENTAL SETTING

Regional Setting

The project site was included in the City of Lodi's most recent comprehensive General Plan Update study area, which included property approximately ½-mile west of the then-municipal boundary and included the project site. The property was subsequently annexed into the City on April 25, 1996.

The project area is underlain by a vast thickness of alluvium derived from the ancestral Sierra Nevada Mountains. This unconsolidated and semiconsolidated materials grades downward into consolidated sedimentary rocks. The site is nearly level with a few scattered soil stockpiles located on the eastern boundary of the site.

There are several fault zones within San Joaquin County and neighboring counties that could affect the proposed project. These include the concealed Tracy-Stockton Fault approximately 12 miles southwest, the Midland Fault zone approximately 20 miles to the west, the Melones Fault 36 miles to the east, and the Green Valley-Concord and Hayward faults approximately 46 and 52 miles, respectively, to the west (City of Lodi, 1988). No faults have been identified on site. The project area is located with Seismic Area 3 pursuant to the Uniform Building Code.

The General Plan states that approximately 1,704 acres of unincorporated land was included in the General Plan updates study area. Of these 1,704 acres, about 1,352 acres were in agricultural use. The City of Lodi's General Plan EIR identified the loss of approximately 1,550 acres of prime agricultural lands as a result of implementation of the General Plan (City of Lodi, 1991). This was identified as being an unavoidable significant impact. The City of Lodi has a number of policies designed to preserve agricultural land within the City and on lands adjacent to its city limits.

Moreover, the City's Westside Facilities Plan, which includes the proposed project site, calls for the establishment of a permanent buffer between urban land uses and lands expected to remain under agricultural production. The goal of these measures is to ensure the long-term viability of agriculture on lands surrounding the City, as well as throughout San Joaquin County as well as to serve as a physical and visual buffer between agricultural and urban land uses (City of Lodi, 2001).

Local Setting

Corresponding to the underlying granitic alluvial parent materials, the soils in the project are sandy loams. The soil at the site is reported as Acampo Sandy Loam, which is moderately well-drained with moderately rapid permeability and moderate water capacity (City of Lodi, 2002).

The approximately 29-acre project site is identified in the General Plan Background Report (City of Lodi. 1991, Figure 11-1) as having Capability Class II soils. These soils are described in the Background Report as meeting the soil criteria for California's "Prime Farmland" soils.

This soil type is considered Prime Farmland as defined through the Farmland Mapping and Monitoring Program of the State of California's Division of Land Resource Protection. The City of Lodi's General Plan Update, 1988, states that the City has approximately 158 acres of agricultural land within the city limits. While this land would be considered Prime Farmland through the Farmland Mapping and Monitoring Program of the State of California's Division of Land Resource Protection, it is not designated for agricultural use through the City's zoning maps or General Plan. In addition, there are no Williamson Act contracts associated with the property. The proposed project site currently has a General Plan designation of Low Density Residential and Neighborhood Community Commercial and corresponding zoning designations of R-2 and Commercial Shopping.

Relevant City of Lodi General Plan Policies

The Lodi General Plan contains a number of policies that direct the future and long-term use of the project site. Other General Plan policies relevant to other environmental issues are incorporated into those sections and are not duplicated in the Geology and Soils discussion. Among the policies relevant to the Geology and Soils discussion are the following:

Relevant City of Lodi General Plan Policies

- Goal B: To preserve agricultural land surrounding Lodi and to discourage premature development of agricultural land with nonagricultural uses, while providing for urban needs.

- Policy 1. The City shall encourage the preservation of agricultural land surrounding the City.

- Policy 2. The City should designate a continuous open space greenbelt around the urbanized area of Lodi to maintain and enhance the agricultural economy.

3.12.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

Significant impacts related to Geology and Soils were determined from criteria stated in *Appendix G of the State CEQA Guidelines*. In addition, the questions related to agriculture are included in these thresholds of significance:

Geology and Soils

Would the project:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

    a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?
    b) Strong seismic ground shaking?
    c) Seismic-related ground failure, including liquefaction?

- ❖ Result in substantial soil erosion or the loss of topsoil?
- ❖ Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?
- ❖ Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property*?*

Agricultural Resources

Would the project:

- ❖ Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- ❖ Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- ❖ Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

IMPACT 3.12-A. Rupture of a Known Fault: The proposed project would require grading activities. No faults have been identified on the site or within the project vicinity. As no faults have been identified on the project site, or within the project vicinity, the potential for grading operations to result in the rupture of known earthquake fault would be minimal and the project would result in a less than significant impact. (Less Than Significant Impact).

There are several fault zones within San Joaquin County and neighboring counties that could affect the proposed project. These include the concealed Tracy-Stockton Fault approximately 12 miles southwest, the Midland Fault zone approximately 20 miles to the west, the Melones Fault 36 miles to the east, and the Green Valley-Concord and Hayward faults approximately 46 and 52 miles, respectively, to the west. No faults were identified in the General Plan study area, including on this site. As there are no faults located on the project site, or in the project vicinity, no potential for fault rupture is anticipated.

> **Mitigation 3.12-A. No faults have been identified onsite or within the project vicinity, therefore no mitigation is required. (Less Than Significant Impact).**

IMPACT 3.12-B. Strong Seismic Ground-Shaking: Strong ground shaking is likely to occur at the project site due to a large magnitude earthquake. However, the proposed project is not expected to expose people or structures to excessive risk. (Less Than Significant Impact)

As previously stated, active faults are located in the general vicinity of the project site. These faults could create strong seismic ground shaking in the proposed project area These include the concealed Tracy-Stockton Fault approximately 12 miles southwest, the Midland Fault zone approximately 20 miles to the west, the Melones Fault 36 miles to the east, and the Green Valley-Concord and Hayward

faults approximately 46 and 52 miles, respectively, to the west. The Lodi General Plan EIR concluded that the maximum expected earthquake in the Lodi area corresponds to a Modified Mercalli Intensity VIII. Damage to well-made structures can be expected as well as general alarm and panic amongst people. The project site is located within the Uniform Building Codes (UBC) Seismic Area 3. Construction in accordance with the Uniform Building Code for this seismic area would reduce the potential for impacts to the maximum extent possible and to a less than significant level.

> **Mitigation 3.12-B Routine implementation of City of Lodi policy requiring adherence to the Uniform Building Code for this seismic area will reduce the potential for impacts related to strong seismic ground shaking to a less than significant level, therefore no mitigation is required. (Less Than Significant Impact)**

IMPACT 3.12-C. Ground Failure: The potential of ground failure, including liquefaction is considered low. (Less Than Significant Impact)

The Lodi General Plan EIR did not identify any significant impacts related to ground failure and liquefaction. The nearest water body to the proposed project site is the Mokelumne River, which is approximately 2 miles north. The site has a water table of thirty feet deep. As mentioned above, is a policy of the City of Lodi to require construction in accordance with the Uniform Building Code. Routine implementation of this City policy would reduce the impact to a less than significant level.

> **Mitigation 3.12-C: Routine implementation of City of Lodi policy requiring adherence to the Uniform Building Code will reduce the potential for impacts related to ground failure and liquefaction to a less than significant level, therefore no mitigation is required. (Less Than Significant Impact).**

IMPACTS 3.12-D. Soil Erosion & Loss of Topsoil: The soils that exist with the project area have an erosion hazard of none to slight. To ensure that potential erosion or loss of topsoil does not occur during project construction, appropriate erosion control measures will be installed. Therefore, less than significant impacts related to soil erosion would result with project implementation. (Less Than Significant Impact)

The soils at the project site are of the Acampo series, which are described as being moderately well drained with slow runoff and moderately rapid permeability. The topography of the site is nearly level. The potential for soil erosion and loss of topsoil is considered to be minimal. Implementation of standard erosion control measures to be used during construction would ensure that no substantial erosion or loss of topsoil would occur.

The grading operations are expected to result in the import of approximately 50,000 cubic yards of soil. Based upon the standard dimensions of a haul truck, it is estimated that each truck would haul 12 cubic yards of soil, with an average loading time of 3 minutes per truck. The haul route considered for this analysis would be initiated from a site along Lower Sacramento Road, approximately a ¼ mile south of the proposed project site. A conservative estimate of the number of truck trips required to transport soil is 250 cubic yards a day, or 21 inbound and 21 outbound trips per day. Mitigation has been incorporated in the Air Quality section of this EIR to avoid the movement or loss of dust/soil during transport (Refer to Section 3.3).

Through the implementation of standard erosion control measures and the inclusion of Mitigation 3.3-A of this EIR, no substantial erosion or loss of topsoil would be anticipated an the roject would result in a less than significant impact.

> **Mitigation 3.12-D: No substantial erosion or loss of topsoil is anticipated therefore no mitigation is required.**

IMPACTS 3.12-E. Geologic and/or Soil Instability: The geologic unit and soils at the site have not been identified as being unstable or exhibiting the potential to become unstable. (Less Than Significant Impact)

The soils at the project site are of the Acampo series, which are described as being moderately well drained with slow runoff and moderately rapid permeability. The topography of the site is nearly level. The site is underlain by alluvium. The site has not been identified as having geologic or soil units that are unstable or have the potential to become unstable. No known problems exist in the area.

> **Mitigation 3.12-E: The geologic unit and soils at the site have not been identified as being unstable or exhibiting the potential to become unstable, therefore no mitigation is required.**

IMPACTS 3.12-F. Expansive Soil: The soils at the site have not been identified as being expansive as defined in Table 18-1-B of the Uniform Building Code (1994). (Less Than Significant Impact)

Soils containing a high clay content often exhibit a relatively high potential to expand when saturated, and contract when dried out. This shrink/swell movement can adversely affect building foundations, often causing them to crack or shift, with resulting damage to the buildings they support. The soils at the project site are of the Acampo series. These soils do not have a high clay content that would cause adverse effects to building foundations.

> **Mitigation 3.12-F: The soils at the project site do not have a high clay content or exhibit expansive properties that would result in adverse effects to building foundations, therefore no mitigation is required.**

IMPACT 3.12-G. Loss of Prime Farmland: The proposed project would result in the direct conversion of approximately 29 acres of Prime Farmland. As stated in the City's General Plan, no mitigation is available that would reduce this type of impact to a less than significant impact other than outright prohibiting development on prime agricultural lands. The loss of 29 acres of Prime Farmland would be considered a significant and unavoidable impact. (Significant and Unavoidable Impact).

The project site is located on Prime Farmlands, as described by the Farmland Mapping and Monitoring Program of the State of California's Division of Land Resource Protection. The proposed project would permanently remove this land from potential agricultural production. The loss of Prime Farmland due to the City of Lodi General Plan land uses was assessed in the City of Lodi General Plan EIR (City of Lodi, 1988). Proposed General Plan land uses on Prime Farmland was identified as a

significant and unavoidable impact. The General Plan listed several policies that were adopted to help reduce the severity of the loss of Prime Farmlands. In addressing the loss of Prime Farmland, the Westside Facilities Plan calls for the development of a permanent buffer between planned urban and agricultural uses.

The proposed project would result in the direct conversion of approximately 29 acres of Prime Farmland. As stated in the City of Lodi General Plan, mitigation measures are not available to reduce this type of impact to a less than significant impact. The site would either need to remain entirely vacant or in agricultural production to avoid this significant impact because any loss of Prime Farmland would be considered a significant impact. Full retention of the site in vacant or in later agricultural land use is considered infeasible because such use would be inconsistent with all of the Project Objectives and would prohibit development of any of the proposed use. Consistent with the General Plan EIR determination regarding the loss of Prime Farmlands, the proposed project would result in a significant and unavoidable impact regarding the loss of Prime Farmlands.

> **Mitigation 3.12-G: No mitigation is available that would reduce this impact to a less than significant level. (Significant and Unavoidable Impact)**

IMPACT 3.4-H. Consistency with Agricultural Land Uses: The proposed project site is not designated as agricultural use through the City's zoning maps or General Plan, nor actively used for agricultural production. Consequently, the project would not result in the loss of agricultural productivity. (Less Than Significant Impact).

Except for one shed structure, the project site is currently vacant. The site is not currently used for agricultural production, but instead is in an inactive state. While the soils are considered Prime Farmlands (as discussed in Impact 3.4-A), the site is not designated in the City of Lodi General Plan as agriculture. Instead, the property is currently designated as Low Density Residential and Neighborhood Community Commercial and is proposed to be entirely Neighborhood Community Commercial. Since the proposed project site is neither used nor designated for agriculture, the project would not result in the loss of agricultural productivity in the City of Lodi. The project site does not currently have any Williamson Act contracts associated with it.

> **Mitigation 3.12-H.: The proposed project would not conflict with agricultural land zoning or Williamson act contracts. The property is not zoned for agricultural use and does not have any Williamson Act contracts associated with it.**